

Application No.: 10/564,754

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AMENDMENT TO THE CLAIMS

1. (Currently amended) A thin-film transistor comprising:  
a semiconductor layer, and a source region, a drain region, and a gate region which are formed on the semiconductor layer to be separated from each other; wherein said semiconductor layer is made of composite material, [[and]] said composite material comprises organic semiconductive material and at least one kind of inorganic material particles dispersed inside the organic semiconductive material, and a content rate of said particles in said semiconductor layer is more than 0 volume% and not more than 60 volume%.

2. (Original) The thin-film transistor according to Claim 1, wherein an electric resistance of said inorganic material is lower than that of said organic semiconductive material, during ON operation of the thin-film transistor.

3. (Original) The thin-film transistor according to Claim 1, wherein a maximum particle diameter of said particle is smaller than a distance between said source region and said drain region.

4-5. (Canceled)

6. (Original) The thin-film transistor according to Claim 1, wherein a group of said dispersed particles comprises at least first particle group and second particle group, having different average particle diameters.

7. (Original) The thin-film transistor according to Claim 6, wherein the average particle diameter of said first particle group is more than 0% and less than 15% of the average particle diameter of said second particle group.

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8. (Original) The thin-film transistor according to Claim 1, wherein said inorganic material is a conductive material.

9. (Original) The thin-film transistor according to Claim 1, wherein said inorganic material is a semiconductive material.

10. (Original) The thin-film transistor according to Claim 1, wherein said inorganic material is a composite material of two or more materials containing a conductive material and a semiconductive material.

11. (Currently amended) A method of manufacturing a thin-film transistor comprising a semiconductor layer, and a source region, a drain region and a gate region which are formed on the semiconductor layer to be separated from each other, comprising:

a first step of forming composite material by dispersing at least one kind of inorganic material particles inside an organic semiconductive material such that a content rate of said particles is more than 0 volume% and not more than 60 volume%, and

a second step of forming said semiconductor layer using said composite material produced in the first step.

12. (Original) The method of manufacturing a thin-film transistor according to Claim 11, wherein an electric resistance of said inorganic material is lower than that of said organic semiconductive material, during ON operation of the thin-film transistor.

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13. (Original) The method of manufacturing a thin-film transistor according to Claim 11, further comprising a step of selecting particles so as to form a predetermined particle size distribution.

14. (Original) The method of manufacturing a thin-film transistor according to Claim 11, further comprising a step of controlling dispersion so as to form a predetermined particle dispersion condition in said semiconductor layer.

15. (Original) The method of manufacturing a thin-film transistor according to Claim 11, wherein said second step further comprising, a first preparation step of dispersing said composite material in a predetermined solution dissolved or undissolved to obtain a semiconductor layer forming material, and a second preparation step of atomizing, coating, or printing said semiconductor layer forming material prepared in said first preparation step to a predetermined location, and then drying the material to form said semiconductor layer.

16. (Previously presented) An active matrix display, wherein a plurality of the thin-film transistors according to Claim 1 are provided as switching elements for driving pixels.

17. (Previously presented) A radio ID tag, wherein the thin-film transistor according to Claim 1 is used as a semiconductor device for forming an integrated circuit.

18. (Previously presented) A portable device, wherein the thin-film transistor according to Claim 1 is used as a semiconductor device for forming an integrated circuit.